

Work Order ID 76308

76308

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November 8, 2011 1:42:29 PM

Item ID: D6104-005 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Round Billet, 17-4
 Start Date: 11/08/11 Start Qty: 12.00 ***12*** Cust Item ID:
 Required Date: 11/18/11 Req'd Qty: 12.00 ***12*** Customer:
 Reference:

Approvals: Process Plan: CL Date: 11/11/08 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6104	Rev B								

100 PURCHASING 0.00
100
 Purchasing Memo 0.00
 Purchasing Issue P/O: 15400 a)Description: S.S round billet b) Ø4.00" x 5.10" longc) Tolerance on all dimensions are +0.030"/-0.000" d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630)e)One blank makes 2 partsf) Material certification required

CL 11/11/08 (12)

110 Receive & Inspect for Damage & Mat'l Certs 0.00
110
 Packaging Memo 0.00
 Packaging Ensure material certification is attached

CL 11/11/11 (12)

120 QC6- Inspect dimensions to drawing 0.00
120
 QC Memo 0.00
 Quality Control Ensure Material certification comply to Dwg D6104

SA 11/11/13 12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: <u>CNC</u>	0.00							
130									
Packaging	Memo	0.00	SA	10/10/13		12			
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	0.00							
Quality Control									

11/11/14
 (12)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Picklist Print

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Work Order ID: 76308

Parent Item: D6104-005

Start Date: 11/08/11

Required Date: 11/18/11

Parent Item Name: Round Billet, 17-4

Start Qty: 12.00

Required Qty: 12.00

Comments: IPP A: 01.05.08New Issue EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6104-005P 17-4 SS Roundbar 4.00"OD		Purchased	No			110	Each	0.0000	1	12			



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

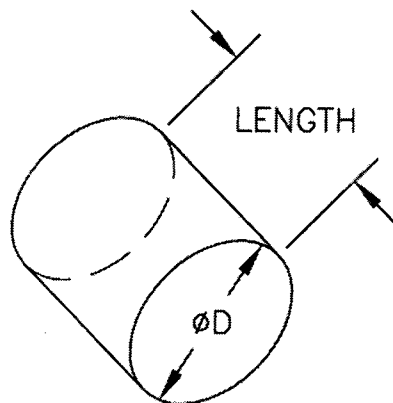


DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29 *[Signature]*

SPECIFICATION CONTROL DRAWING



*Call 11/10/08
w/0: 76308*

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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**Castle Metals®**

A. M. Castle & Co.

BORDEREAU DE MARCHANDISES

Page 1 of 2

No de Formulaire d'Emballage / Shipment No:1057879

Expédié de / Ship From: A. M. Castle & Co. (Canada) Inc. MONTREAL 835-SELKIRK AVENUE POINTE CLAIRE, QUEBEC H9R 3S2		Vendu à / Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Expédié à / Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Livré à / Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA			
Date d'expédition / Date Shipped 09-NOV-2011		F.O.B. ORIGIN		Modalités de transport / Freight Terms Prepaid		Transporteur / Carrier MANITOULIN		No du Bon de connaissance / BOL No 1057879-2	

Détails d'expédition / Shipment Details	Destination finale / Final Destination Branch - MON
--	--

N° de commande / Order No	N° de ligne Line No	N° d'article / Item No	Description	
1821121	1	42464.MO	4.0000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.132.0000-156.0000 CUT TO 5.1 IN (+ .0620/- .0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AMS 5643	
N° de bon de commande / Purchase Order No	Nbre de pièces / Part Number		Qté commandée / Ordered Qty	Qté Facturée / Invoice Qty
15400	YOUR ITEM NUMBER: D6104-005		12-00-PCS	12-PCS

Détails / Details		AMS 5643					
N° de livraison / Delivery No : 103675308	Usine / Mill	No de coulée / Heat Number 524906	Code méc / Mech Id	Pièces / PCS 12	Largeur (Pouce) / Width (IN)	Longueur (Pouce) / Length (IN)	Qté expédiée / Shipped Qty(LBS) 224.75

Ces marchandises/technologies sont sujettes aux règlements de l'Export Administration et du département d'état des Etats-Unis. Si elles ont été/sont exportées, elles doivent se conformer à ces règlements. Toute modification du contrat de transport contraire aux lois des Etats-Unis est interdite.

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

Nous certifions par la présente que le matériel couvert par cette certification est conforme aux spécifications susmentionnées et aux exigences applicables pour le matériel, y compris toute spécification faisant partie de la description. Les rapports d'essai sont archivés pour fins de consultation. Toute requête concernant du matériel défectueux sera rejetée à moins qu'elle ne soit faite par écrit à A. M. Castle & Co. dans les 60 jours suivant la livraison. Le matériel coupé sur mesure ou coupé par le client ne peut être retourné pour crédit.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Ce matériel a été reçu et inspecté par

Date:

Name:



Castle Metals®

A. M. Castle & Co.

BORDEREAU DE MARCHANDISES

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Reviewed by Authorized Castle Metals Representative:			
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Certificate of Test

HEAT 524906 ORDER 614277/ 02 BOL 0208102 * CERTIFICATION * 08/04/10

SHIP TO:
A. M. CASTLE & CO.
26800 MILES ROAD
216-292-7600
BEDFORD HEIGHTS 441460000

----- YOUR ORDER & DATE -----
62974 8/04/10 CUST# 0254001 CUST TAG#42464

----- ITEM DESCRIPTION -----
GRADE ~~A7-4~~ Ship Condition CONDA
Size 17-4 RND HRART CONDA 4.0000 x 144.000 RL
Country of Melt: SWEDEN Country of Mfg.: UNITED STATES
NAFTA Country of Origin is Country of Melt

No weld repair
Free of mercury contamination, Free of radiation contamination
No WEEE relevant substances; Meets EU electrical ROHS

Total Bundles 2 Total Weight 4850

WO 2009432 Bundles: 1F, 1G

----- SPECIFICATIONS -----
MFG TO FINISHED BAR IN THE USA FROM BILLETS IMPORTED SWEDEN
AMS 2303E AMS 5643R
ASME SA182 E07 A07, A08 & A09 ASME SA564 E07
ASTM A484 09 ASTM A564 04 Type 630
DFARS 252.225.7014 6/05 Reduction Ratio 3:1 minimum
UNS S17400, AISI 630 No weld repair
Free of Mercury Contaminatio AM Castle 3174-10 R8

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped 294 HB Hardness as tested 400 HB
Hardness as shipped 031 HRC Hardness as tested (43 HRC)
Grain size 6.0 Tensile strength, KSI (MPa) 190.0 (1310)
Micro OK 0.2% Yield Strngth, KSI (MPa) 175.0 (1207)
Intergranular corrosion
Macro OK Elongation % in 4D 14.0
Reduction of area % 46.0
Ferrite 1.0

----- CHEMICAL COMPOSITION -----
Carbon (C) .012 Manganese (Mn) .730
Phosphorus (P) .021 Sulphur (S) .025
Silicon (Si) .390 Chromium (Cr) 15.350
Nickel (Ni) 4.710 Cobalt (Co) .034
Copper (Cu) 3.270 Moly (Mo) .170
Nitrogen (N) .021 Columbium (Cb) .350
Titanium (Ti) .005 Aluminum (Al) .003
Tin (Sn) .005 Cerium (Ce) .010
Boron (B) .001 Tantalum (Ta) .005
Vanadium (V) .051 .000
Columbium/
Tantalum (Cb+Ta) .355
Iron (Fe) Balance
Frequency .000 Severity .000
Melt Practice EAF
Refining Practice AOD
De-long Ferrite

Knowingly & willfully falsifying or concealing a material act on this form, or making false, fictitious or fraudulent statements or representations herein could constitute a felony punishable under federal statutes. We hereby certify that the test results shown in this report are correct and accurate as contained in the records of the company and are in compliance with the specifications, codes, and standards listed above.

M.F. Marcanio, Quality Manager

M.F. Marcanio



Certificate of Test

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A. M. CASTLE & CO.
26800 MILES ROAD
216-292-7600
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Boron (B) .001 Tantalum (Ta) .005
Vanadium (V) .051
Columbium/
Tantalum (Cb+Ta) .355
Iron (Fe) Balance
Frequency .000 Severity .000
Melt Practice EAF
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M.F. Marcanio, Quality Manager

CASTLE METALS - CLE

HEAT NUMBER 524906
MECHANICAL ID _____
ITEM CODE 424621
LOT NUMBER 651956
P. NUMBER 62974
RECEIPT DATE 8-5-10
SUPPLIER Auto Kumpu
LCS _____
COI _____
APPROVED XB

